

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/001154

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-11 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-6 _____ received by this Authority on 15.04.2005 with letter
- nos.* _____ received by this Authority on of 15.04.2005
- ☒ the drawings:
- sheets 1/5-5/5 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. This report makes reference to the following document:

D1: EP-A-0 283 275 (FUJITSU LTD) 21 September 1988

2. The present application does not meet the requirements of PCT Article 33 because the subject matter of claims 1-6 does not involve an inventive step within the meaning of PCT Article 33(3).

2.1 D1 discloses (the references in parentheses are to this document):

- a phase/frequency-locking loop with a phase/frequency comparator (see the passages indicated in the search report), in which
- the output signal (RS) of the reset logic unit (3) is actuated only if both output signals (Q_{1A} and Q_{2B}) of both edge-triggered storage elements (1 and 2) are actuated (see column 8, lines 19-38),
- and is only deactuated if both output signals are deactuated (see column 8, lines 39-53; note

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that both output signals (Q_{1A} and Q_{2B}) are deactuated if the signals Q_{1a} and Q_{2b} are actuated), and

- the reset logic unit (3) is implemented with inverse logic using an asynchronous level-triggered RS-storage element (NG_2 , NG_4), wherein the reset input of the asynchronous level-triggered RS-storage element (NG_2 , NG_4) is supplied by the output signal of an inverted AND-gate.

Claim 1 differs therefrom only in that

- the reset input is supplied by an OR-gate and that
- each of the two edge-triggered storage elements has only one output with non-inverted logic.

These distinguishing features have the effect of minimizing wiring overheads. The invention thus addresses the problem of reducing wiring overheads.

The solution provided to the problem is obvious to a person skilled in the art and does not involve an inventive step.

A person skilled in the art knows from general circuit teaching that an OR-function can be implemented both by an OR-gate (alternative 1) and by an AND-gate with inverted signals (alternative 2) and that both circuit arrangements are mutually

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interchangeable. The optimal arrangement should be selected according to the conditions of the particular circuit environment.

To a person skilled in the art the inverting AND-gate NG₃ in D1 evidently implements an OR-function according to alternative 2, since the inputs of the gate are connected to the inverted outputs Q_{1a} and Q_{2b} of storage elements 1 and 2. A circuit arrangement according to alternative 2 is evidently selected in D1 in order to minimize the output load of outputs Q_{1A} and Q_{2B} of storage elements 1 and 2.

The advantages of a circuit arrangement according to alternative 1 are also immediately clear to a person skilled in the art. In alternative 1 an OR-gate is used which, because of the required inversion of the input signals, is connected to the outputs Q_{1A} and Q_{2B} of storage elements 1 and 2. Since, therefore, the inverted outputs Q_{1a} and Q_{2b} of storage elements 1 and 2 are no longer necessary, a person skilled in the art would dispense with them, recognizing that a circuit arrangement according to alternative 1 has the effect of reducing wiring overheads. He would use this alternative where applicable to solve the problem addressed by the invention, without thereby being inventive.

Therefore, claim 1 does not meet the requirements of PCT Article 33(3).

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2.2 Since the subject matter of claim 1 contains all the features of claim 6, independent claim 6 therefore also fails to meet the requirements of PCT Article 33(3).

2.3 Dependent claims 2-5 do not contain any features which, in combination with the features of any claim to which they refer back, meet the PCT requirements for inventive step because the features of claims 2, 3 and 5 are directly shown in D1, figure 1, and the features of claim 4 are evidently directly known to a person skilled in the art.

Therefore, these claims also fail to meet the requirements of PCT Article 33(3).